

Pilot Tailoring via Internet, a strategy to promote energy efficiency within Dutch households

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Abstract

The growing importance of a global reduction in CO₂ emissions requires highly effective instruments. The Dutch government considers households an important target group for energy reduction, because of the large reduction potential. However, influencing consumers' behaviour is difficult because it is a diffuse target group. A promising new instrument to influence energy related behaviour may be tailor-made advice via internet.

New information technologies like internet offer the possibility to reach diffuse target groups, like households, with tailor-made advice. With computer tailoring the information can be personalised and *fitted* to personal circumstances and motivations. This means that each person receives personal, tailor-made advice. Households also receive follow-up advice and feedback about the consequences of their behaviour (saved money and carbon dioxide emissions etc). Households will also be able to benchmark with other households. Tailor-made advice via internet has the potential to combine the success factors for behavioral change.

In the project PiTH, "Pilot Tailoring Households", a tailoring system will be developed for Dutch households. This innovative project is initiated and sponsored by the Ministry of Economic Affairs. Detailed behavioural research is carried out in order to lay a good foundation for the computer

system. In 2003 the system will be tested among 1 000 households and, if successful, implemented on a national scale.

Introduction

Energy use has increased significantly during the last decades, despite the fact that appliances, products and services have become more energy efficient. People possess (and use) more and more electrical appliances. As a result the use of electricity has increased since 1989 yearly by 2.5% (on average) in the Netherlands. The problems resulting from the growth in energy use, such as the emission of greenhouse gases, appear hard to control. Energy use is therefore an important topic in environmental policy.

The Dutch government considers households an important target group for energy reduction, because of the large reduction potential. The goal of the Dutch government for consumers is a reduction of energy use of 1.3% per year¹. In order to reach this goal, behavioural changes are necessary as well as technological innovations. After all, energy efficient products and services should either be *used* (e.g. turn off lights more often, turn down the heating) or *bought* (e.g. energy-saving light bulbs or energy efficient refrigerators) to actually reduce energy.

Influencing consumers' behaviour is difficult because it is a diffuse target group, however. In recent years, possibilities have occurred to increase the impact of interventions aimed at behavioural change with the help of developments in in-

1. Energierapport 2002, Ministry of Economic Affairs, The Hague, 2002.

Table 1. Effectiveness of different types of psychological strategies.

| Type of programme | Effectiveness |
|--|---------------|
| 1. Autonomous change (do nothing) | 3.0% |
| 2. Information campaigns (posters and brochures) | 4.0% |
| 3. Selfhelp guide/manual | 10.0% |
| 4. Tailor-made advice (in paper, via internet, by phone, etc.) | 20.0% |
| 5. Individual support (face-to-face) | 27.5% |

Heather Greer et al., *The guide to Change*. Aenas technical publiserhs, Best, The Netherlands, 2000.

formation technology. Especially the use of computer tailored information methods have proven their added value in the health services in bringing about behavioural change. It seems that there are also opportunities with respect to influencing energy related behaviour.

In this paper we will elaborate on the prospects of tailor-made advice via internet to influence consumers' energy related behaviour. First we will have a closer look on changing energy related behaviour and interventions. Then we will explain the concept of tailoring and the steps that have to be taken into account in order to set up a project like this, illustrated by the so called PiTH project. We will end this paper with some important comments and the state of PiTH project at present.

Changing energy related behaviour and interventions

In general, a distinction can be made between structural and psychological strategies for behaviour change². Structural strategies are aimed at changing the circumstances in which choices are made and affect people's opportunities, via financial-economic instruments (e.g., rewards), legislation and enforcement or physical changes (e.g., environmental alterations, technological innovations, provision of facilities). Psychological strategies are aimed at changing people's knowledge, awareness, attitudes, norms, values and perceptions via information, education, communication and modelling. Examples are information campaigns, prompts, goal setting, feedback and commitment. In this paper we focus on psychological strategies for behaviour change.

It is argued that consumers are prepared to change their behaviour if:

- the consequences of the change are beneficial for the consumers themselves,
- the type of desired change can be easily fitted into and adapted to the daily routine,
- the desired (behavioural) change is not too difficult to implement,
- the 'new' desired behaviour can be tried out first,
- consumers receive positive feedback about the consequences of their behavioural change.

The importance of these conditions in realising behavioural change differs in many cases not only per specific target group, but often even per member of the group (e.g. per household). In general it can be said that the chance for individual behavioural change increases if specific interventions fit into the consumers' personal circumstances. When personal preferences and possibilities to structurally contribute to energy and environmental objectives are taken into account, then the chance that consumers will show (lasting) energy saving/energy friendly behaviour increases.

In Table 1 an overview is given of the effectiveness which can be expected of the different approach methods aimed at behavioural change on health issues³. They are based upon American experiences and research data, but also upon Dutch data – however only scarcely available. The data are especially meant to make a comparison between the different intervention strategies possible.

The table illustrates convincingly that the chance for individual behavioural change increases if specific interventions are in keeping with consumers' personal circumstances. Therefore individual support receives the highest score for effectiveness. Tailor-made advice is second best, as individual preferences and possibilities are taken into account and the opportunity of feedback is seized. On the other side, the generic strategies that apply the one-size-fits-all approach seem far less effective.

But there are other important reasons next to **effectiveness** that highly speak in favour of tailor-made advice (via internet)⁴:

- **Scope.** The scope (number of people reached within a limited period of time) of tailor-made advice by paper or via internet is much larger than face-to-face contact. The scope of 'new media' is nowadays large and still increases (internet). Recent statistics⁵ indicate that in May 2002 internet use was about 54%. Consequently, the *impact* of tailor-made advice (effectiveness*scope) is expected to be larger than other strategies.
- **Efficiency.** The costs for developing tailor-made advice systems are rather high. In the long run, however, costs decrease rapidly. With regard to the large impact of tailor-made advice, this type of intervention is expected to be highly efficient compared to the other behaviour strategies listed above.

2. Wokje Abrahamse, Linda Steg, A review of energy conservation studies (Draft version), University of Groningen, Department of Psychology, October 2002.

3. Empirical proof for the effectiveness of expert tailored programmes in the field of energy is not known to us. It is a new intervention and little effectiveness research has been carried out in this field. However, based on an increasing amount of argumentation from literature of other fields (health, education) it can be assumed that the effectiveness of expert tailored advice is substantially higher than generic types of advice.

4. Ruud Jonkers et al, Computer Tailored voorlichting en energiebesparend gedrag; een verkenning van achtergronden en werkingsmechanismn, Rescon, Haarlem, 2000.

5. www.cyberatlas.internet.com

These reasons in favour of computer tailoring caused the Dutch Ministry of Economic Affairs to start an investigation whether a tailor-made advice about energy use can stimulate households/consumers to take energy saving measures and/or develop energy saving behaviour. Novem is executor and project leader of this project, the so-called Pilot Tailoring Households (PiTH).

Concept of tailor-made advice and Pilot Tailoring Households (PiTH)

Tailor-made advice is more than personalising information. Personalisation is often carried out by addressing a text to a certain individual, in which his/her name is used several times. In tailoring the information is adapted to the individual motivational and behavioural aspects and circumstances in which the behaviour occurs. When producing ‘tailored’ information/education (distributed in any shape: in writing via CD-ROM, via internet, via telephone) at least several stages have to be passed through⁶:

1. an assessment is required of (the determining factors) of someone’s energy related behaviour;
2. a ‘essage library’ is required which contains all the energy savings advice which may be needed;
3. an algorithm a set of decision rules, needs to be set up, in which the data from the assessment is evaluated and in which the advice that is in keeping with the specific wishes, needs and possibilities of the advicetaker is selected;
4. suitable channels are required to communicate this advice in an understandable, clear and attractive way to the person concerned. This could be done by way of a letter, but also for example via the internet.

In line with these steps, four disciplines (behaviour, energy, Information and Communication Technology (ICT) and communication, represented by four different organisations are involved in the PiTH project, briefly amplified below.

BEHAVIOUR

During an extensive behavioural research (N=1 500) it was investigated how energy behaviour can be persistently changed via a tailor-made advice system. The primary conclusions from the behavioural research are:

- It seems that there is ample interest for tailor-made energy advice among consumers.
- Many consumers say they know much about energy saving, but this is not in accordance with their actual knowledge.
- The research showed that consumers especially see opportunities in the field of low-energy apparatus, lighting, taking shorter showers, heating and washing and drying. The tailor-made advice system will have to focus on these energy saving options.

Table 2. Types of energy functions and appliances.

| Function | Appliance |
|-------------------|---------------------|
| Cooling | Refrigerator |
| | Freezer |
| Food preparation | Cooking unit |
| | Dish washer |
| Clothing cleaning | Washing machine |
| | Dryer |
| Lighting | Light-bulbs |
| Climate control | Heating system |
| | Types of insulation |
| | -glass |
| | -wall |
| | -floor |

The starting point of the system should be the interest one has for the subject (e.g. financial benefits, environmental reasons). Furthermore, the system should focus on eliminating why the restrictions by providing tips how one can deal with these restrictions (e.g. the advice ‘buy low-energy light bulbs’ is translated into: ‘where can I buy low-energy light bulbs?’). Also, consumers’ awareness about their insufficient knowledge about the possibilities of energy saving will have to be raised (by benchmarking). Finally, consumers will receive feedback about the positive effects of their measures.

ENERGY

For each appliance a distinction is made between acquisition and use of the product during the energy analysis. Within use of the product, distinction is made between frequency and intensity. These distinctions refer to different behaviour options. Then, for each particular behaviour option the energy use has been calculated on a yearly basis.

In Table 2, energy functions and matching appliances are included.

ICT

Building a prototype has proven that a Knowledge Framework in combination with a content management system is able to realize the desired tailor-made advice system, and furthermore, that the other preconditions such as reliability, efficiency, maintenance and portability are met.

COMMUNICATION

A lot of attention will be paid on clear formulation of the questions and advice. People must be addressed in the right tone of voice, and the message of the advice must be tailored on ones personal interest, e.g., via communicating the financial or environmental advantages of an advice. Besides this the design of the site must also be user friendly, playfully and visually attractive. We will use a couple of strategies to make the system attractive to come back to tailoring system again. Goal-setting, benchmarking and giving people positive feedback on their results are proven techniques to motivate people to change their behaviour.

6. Ruud Jonkers et al, Computer Tailored voorlichting en energiebesparend gedrag; een verkenning van achtergronden en werkingsmechanismen, Rescon, Haarlem, 2000.

Final comments and state of PiTH

It is beyond doubt that interdisciplinary co-operation is essential in order to make a success of this project. Intensive co-operation, clear definition of tasks and results and quality management are key issues to all participants in the PiTH project team.

Furthermore, one should note that in the past projects like these failed because the emphasis was set too much on the technical aspects. In this project the results of the behavioural research lay the foundation of the ICT system (e.g. the system must be able to make a quick scan of the visitor and must give visitors feedback).

At the moment of writing this paper, we have just finished the first phase of the project (the feasibility study). We are pleased to announce that tailor-made advice via internet to influence energy related consumers' behaviour is realisable and most likely to be successful. In the second phase, ending in July 2003, the actual system will be built. During the third phase in the coming autumn and winter, a test among 1 000 households will give us insight in the energy saving effects of this promising new kid on the block: computer tailoring.

Anyone who's interested in the results, please contact Iemy Brand or Jessica Dirks.

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